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Can Words Breed or Kill Investment? Metaphors, Imagery, Affect and Investor Behaviour

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Abstract

In "building your portfolio", *building* is what linguists call a conceptual metaphor: the investor does not literally pile up his assets like they were bricks, but "building" is used as a metaphor for putting together elements. We could therefore also say "cooking", "sewing" or "weaving" your portfolio, as these are also activities that involve putting together elements to make your life comfortable. Conceptual metaphors make some aspects of the topic at hand salient, and hide others. Metaphors create imagery and induce affect. As the latter is shown to influence risk perception and return expectations, it is worthwile to study metaphors in stock market reporting. In this paper we identify the metaphors in newspaper articles on the stock market both during a crash and in "normal" times. We find that both in the general and the financial press journalists use many metaphors, that these come from a limited number of source domains, and that the latter are predominantly masculine, thus "priming" readers with certain aspects of investing. We speculate that this may create positive affect among men, not women, and bias masculine investors toward excess trading. If so, stock market reporting in newspapers could contribute to the gender difference in stated risk tolerance, financial risk taking, stock market participation and (excess) trading. We suggest further research to verify this.

JEL Codes: G02, G11, D14, D18, J16

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1. Introduction

There is growing interest in and evidence of the non-neutrality of language in terms of influencing attitudes and decisions. Two statements that are equivalent from an analytical point of view may create a different attitude and decision depending on their frame. Keren (2012) provides an overview and concludes that the effect of frames has important theoretical *and* practical implications, also for financial (pension) communication. Keyser *et al.* (2012) find that decision biases are reduced when the decision problem is framed in a foreign language. Lee *et al* (2010) and Lee and Schwarz (2012) find that metaphors influence judgment, including self-assessment.

Cognitive metaphor theory stresses that we use conceptual metaphors, often without realizing it, to make abstract concepts more "imaginable" (Lakoff and Johnson, 1980). A conceptual metaphor is a word or combination of words taken from the concrete, physical world (in linguist terminology: "source domain") to describe a concept from an abstract world ("target domain"). Examples of well known metaphors used by the financial industry, financial journalists and financial supervisors are *building your portfolio*, *level playing field* and *beating the market*. In this context, "building" is a metaphor for putting together elements for future comfort: the investor does not literally pile up his assets like they were bricks. We could therefore also say for instance "cooking", "sewing" or "weaving" your portfolio, as these are also activities that involve an effort in putting together elements to make your future life comfortable. But we don't, and in fact when one uses the metaphor of "knitting" in a discussion or presentation about investing, it makes the audience smile, giggle or even laugh out loud, illustrating that – in line with cognitive metaphor theory - metaphors are not neutral. Metaphors have the effect of imagining ourselves engaging in an activity (Briggs, 2017). They may also suggest a judgment: for instance, if one talks about a gender "gap", the suggestion is that it should be reduced, whereas "gender difference" sounds neutral.

Conceptual metaphors make some aspects of the topic at hand salient, which may influence the receiver within system 1 information processing (Kahneman, 2011; see also Gennaioli and Shleifer, 2010 and Bordalo *et al*, 2012; Lakoff and Johnson, 1980). For instance, "beating the market" stresses the aspect of doing better than others (fight, competition), not that of making sure that you will have sufficient means to maintain a desired living standard in the future (intertemporal optimization). Moreover, it suggests action – in contrast with "let your assets

grow", which suggests that you take care and wait-and-see.

Metaphors may be effective in influencing the reader if they "borrow" emotional content from something that the reader "knows" or, in the case of an activity, can imagine him- or herself engaging in it (Briggs, 2017) Through the creation of imagery, metaphors induce affect, which in its turn influences risk perception and return expectations (McGregor *et al*, 2000; Besnier, 1990): this is known as the *affect heuristic* (Tversky and Kahneman, 1974; Andrade, 2005). Positive (negative) *affect*, besides decreasing (increasing) perceived risk, also leads to a higher (lower) estimate of return (Alhakami and Slovic 1994; Slovic *et al.* 2005). According to Baumeister *et al.* (2007), automatic affective responses may influence judgment and behavior if they remind the person of past emotional outcomes. They may therefore influence financial market participation, risk taking and trading activity of financial consumers. In fact, affect has been found to have an impact on overconfidence, which in its turn influences trading in the stock market, with more overconfident investors trading excessively because they think they know more than others (Barber and Odean, 2003).

Cardini (2014) states about metaphors that 'the use of a language that brings such (=*abstract economic, HPJSOL),* concepts down to a more direct level of comprehension is likely to make the reading more accessible and interesting to the wider public in general'; see also Henderson (1982), McCloskey (1983), and Charteris-Black (2000). But what if metaphors stress aspects of a concept or activity that are familiar, accessible and interesting (in the Cardini sense) to some readers, and not to others? According to Avery (2012, 2013) *Diet* in Diet Coke creates imagery that attracts women, not men, who are attracted by *zero*, which creates imagery that is more masculine (see also Boggio *et al.,* 2014, 2017). Familiarity is used to explain the investor home bias, with familiarity being due to geographical proximity (for instance Huberman 2001; see also Merton, 1987). Galinasky and Glucksberg (2013) find that figurative language can serve as a prime. Previous evidence shows that there is no biological gender difference in financial risk tolerance (Brighetti and Lucarelli, 2013), and that the observed difference disappears when females make decisions in an all-women environment (Booth and Nolen 2012, 2014, Booth *et al.* 2014), while no difference is found for males. These findings suggest that financial risk taking of women is culturally-driven and subject to stereotype threat. This raises the question as to the influence of metaphoric language in financial texts.

We want to investigate the type of imagery created by metaphors in stock market reporting to see whether it may be non-neutral in its gender aspect. If so, the language could make the stock

market more accessible and interesting depending on the gender identity of the reader. Moreover, the imagery may influence investor behavior. Our hypothesis is that the imagery created by the metaphors is primarily masculine. Masculinity is defined as a set of characteristics and activities that are thought to be typical of or suitable to men. These include competition, risk, aggression, force, movement, and construction. We therefore characterize the metaphor source domains according to their degree of masculinity.

Boggio *et al* (2014; see also Sanders *et al*, 2016) identify metaphors in websites addressing beginning retail investors, comparing Dutch, English and Italian. They find that the majority of metaphors are borrowed from masculine source domains. Obviously, only a small subset of financial consumers visit a website for investors, and this subset is not random: it consists of people already interested in the possibility of investing in the stock market. To investigate the possibility that metaphors influence interest in investing among the general population we need texts that reach a wider audience. In this paper we therefore identify the metaphors that are used in newspaper articles about the stock market. We compare stock market reporting both during a crash and in more stable times, covering a ten-day period for each.

Conceptual metaphor theory predicts that metaphor use is not random: each "target domain" "borrows" words from a small number of "source domains": the concrete domain they come from. This is indeed what we find. In our database, consisting of articles in a general and a financial newspaper the metaphors come from a limited number of source domains. We also find that in both the general and the financial newspaper the source domains of the metaphors are predominantly masculine. We argue that the language used in newspaper articles covering the stock market therefore stresses certain aspects of investing, while hiding others. We discuss how this may affect investment attitudes and behavior of men and women. We conclude that the metaphor use in stock market reporting in newspapers could contribute to an explanation of excess trading (Barber and Odean, 2003) and of a gender difference in investment attitudes and stock market participation. We make suggestions for further research to verify this empirically.

The paper is structured as follows. In the next section we provide a brief introduction to metaphors. Section 3 gives an overview of previous studies on metaphors used in texts about financial markets. In Section 4 we describe our data and methodology and present our findings: the metaphors and their source domains for each newspaper and period. We interpret the results, focusing on similarities and differences between periods of turbulence and stability and across the three languages. In Section 5 we discuss various methods to categorize the source

domains on a masculinity-femininity scale and conclude that all methods lead to the same categorization: the majority of metaphors come from masculine source domains. Section 6 discusses potential implications of our findings against the backdrop of what we know about the role of familiarity and affect in decision-making under risk and about gender differences in investment attitudes and decision-making. Section 7 summarizes and proposes further research.

2. Metaphor: a primer

In marketing and advertising, metaphors are often carefully and deliberately designed for maximum impact to make consumers more interested, and creative metaphors are used deliberately in poetry (Pushmann and Burgess, 2014; Forceville and Renckens, 2013). There is also growing attention, both in neuroscience and in the financial press, for the persuasive power of deliberately designed metaphors in politics (Bruni, 2013; Li Vigni, 2013).[1] These are "imaginative" metaphors. Conceptual metaphors, on the other hand, are used by all of us mindlessly and spontaneously everyday, unconsciously. They help us to make sense of abstract, complex or unfamiliar concepts and phenomena. Conceptual metaphors speed up information processing by making concepts and actions more vivid – or, in social psychology and behavioral economics terminology, "salient" (see for instance Bordalo *et al*, 2010).

Metaphorization is "the process from concrete and familiar concepts to abstract, unfamiliar ones" (Pushmann and Burgess, 2014). According to cognitive metaphor theory, the *target domain* (= the abstract topic of conversation) "borrows" words from *source domains* (= context where the words come from). The latter may be concrete and/or based on sensory experience. As Lakoff and Johnson (1980) point out, this mapping from the source to the target domain is not random: a specific target domain borrows from a small number of source domains. Charteris-Black and Musolff (2003, p. 156) define a metaphor as follows:

"A metaphor involves *a meaning shift* in the use of a word or phrase. This shift occurs when a linguistic expression is *taken from* one context and *applied to* another. The shift is caused by (and may accelerate) a change in the *conceptual system"*

[1] http://www.ilsole24ore.com/art/cultura/2013-02-10/metafore-persuasive-

Perhaps the creative metaphor most famous in economics is the “invisible hand” of Adam Smith. Recently, behavioral economist has used the metaphor “invisible handwave” for describing the behaviour of economists trying to defend the rational model and market efficiency but cannot do so without (mental) gesturing (Thaler, 2015). Examples of conceptual metaphors used in economics and business are "market" (source domain: physical meeting place to trade goods) to indicate the interaction of supply and demand, "level playing field" (source domain: competitive team sports) used for a market in which access and rules are the same for everyone, "building your portfolio" (source domain: construction), used for saving and investing decisions, “beating" (ie the market, source domain war or competitive sports) and "stock prices climbed" (source domain: (heavy) physical activity). Moreover, metaphors may (as in market, if one should define that as metaphor) or may not (as in level playing field) reflect changes in the concept over time. Originally the trading in assets *did* take place on a physical market, and nowadays the “market” metaphor is used for the abstract concept of the meeting of demand and supply. But financial markets were *neve*r anything like a physical playing field as in sports. Whether or not a word is a metaphor depends on the context. When used for plants, growing is not a metaphor, but when used for financial assets, it is. In the creative metaphor “Cash is King”, *king* is a metaphor, but when used to describe a monarch it is not. This makes it difficult to have a computer program identify metaphors.

Metaphors help us visualize and hence understand abstract concepts. But the same concept may be described by different metaphors, and the same metaphor may have a different effect on the reader depending on her or his familiarity with the imagery created. To take an example from investing: in *building your portfolio*, building is a metaphor, just as is grow in *let your assets grow*. According to cognitive metaphor theory, metaphors stress one aspect of an abstract concept, or put an abstract in a certain light. Building implies action, letting grow is passive. And instead of building, one might say knitting your portfolio, as both building and knitting imply putting elements together. *Beating the market* stresses the aspect of doing better than others (fight, competition), not that of making sure that you will have sufficient means to maintain a desired living standard in the future. Most studies analyzing metaphors, including those on stock market reporting, focus on their source domain and have as their main goal to explain what metaphors reveal about the writer of the text. Landau *et al.* (2009) find that metaphors shape attitudes if people already have a particular motive. Metaphors can also be distinguished depending on whether they describe something as the result of an intention of an animate being, or of an external physical force. The former are called agent metaphors, the latter object metaphors. To take examples from stock market commentary: the S&P *dove like a hawk’* is an

agent metaphor, while the Nasdaq *dropped off a cliff* is an object metaphor (Morris *et al,* 2007; see also Section 3).

Linguists differ as to whether a distinction should be made between dead and alive metaphors (Kovecses, 2010). Some argue that if a metaphor is used frequently and unconsciously, it looses its imaginative power – it is "dead" (Miller, 2008). Others hold the opposite view: they argue that metaphors that are used automatic and effortless are not the least, but the most powerful (Lakoff and Turner, 1989). Given the importance of intuitive thinking, as in Kahneman's "system one", the latter view is more in line with evidence on judgment and decision making. Also, as Briggs (2017) argues, people speak in metaphors about economic concepts because they primarily think about them in ways that are embodied, metaphorical and imaginative. Briggs (2017) presents evidence from cognitive science showing that people project themselves "in imaginative bodily ways, as interacting with economic concepts as if they were physically real".

Note that metaphors are not the only aspect of language that may influence attitudes and behavior. For example, thinking in a foreign language reduces decision biases because it activates system-2 thinking (Keyser *et al*, 2012; Kahneman, 2011). Also, a significant relationship has been found between the language spoken in a country and the savings behavior of its population (Chen, 2013), while Liang *et al* (2014) find a correlation between the language use in annual reports of stock listed companies and their (claims of) corporate social responsibility. Grinblatt and Keloharju (2001) find that Finnish investors trade more in stocks of companies communicating in Finnish, suggesting that familiar language creates better understanding, positive affect, or both. Affect and language have also been studied in linguistic anthropology (e.g. Besnier, 1990), with an emphasis on language reflecting the emotions of the speaker and, therefore influencing the receiver (Van, 1990). Finally, the fact that we use metaphors to describe and judge situations and behavior seems to affect our decisions and actions. For instance, immoral thoughts are shown to increase the appeal of cleansing products – suggesting an association with the "dirty hands" metaphor to describe immoral behavior (see Spike and Schwarz 2012 for an overview of the effect of metaphoric associations on judgment and behavior).

3. Metaphors and financial markets

McClosky (1983) argues that the use of the market metaphor in economics makes certain

aspects of interhuman relationships salient, while hiding others. If so, this applies no less to financial markets. In fact, as pointed out in the introduction, *beating the market* stresses the aspect of doing better than others, not that of making a return in order to have sufficient retirement income. The creative metaphor: "not all eggs in one basket", on the other hand, stresses the individual need to protect savings against risk.

There are several studies of metaphor in financial market reporting. Most of them identify the source domain of the metaphors used, and compare them across events, newspapers or languages. They focus on how the writer uses metaphors to describe concepts, not on their effect on the receiver and neither on how the source domain ranks on a femininity/masculinity scale. Moreover, most of them concentrate on the financial, not the general press – even though there are some exceptions to this rule. White (1997) analyzes the market metaphors used in the coverage of the 1992 currency crisis by the Financial Times, the Times and the Sun. He concludes that the recourse to metaphors for market is widespread and that – in line with Lakoff and Johnson (1980) – they come from a limited number of source domains: *meteorological phenomena*, *living organism*, *predatory animal*, and *war*, where those borrowed from the latter include ammunition, struggle, defense, weapon, fight, and heavy artillery. Charteris-Black and Ennis (2001) identify metaphors in British and Spanish newspapers stock market coverage in the ten-day period surrounding the 1997 global stock market crash of October 27 (due to the Asian economic crisis). This is the period that we have taken as our 1997 database (October 24 – November 2). The authors find that the source domains of metaphors used are quite similar across the two languages and that *natural disaster*, *physical combat* and *health* are frequently found. Charteris-Black and Musolff (2003) compare metaphor use in newspaper reporting of the euro crisis in Britain and Germany and come to similar conclusions. Arrese (2015) distinguishes *disease*, *natural*, *mechanica*l, *war*, *sport and entertainment* and *organism* as source domains of the metaphors in Spanish texts analyzing the 2008 euro crisis. Chung *et al.* (2003) analyze how the stock market is described in in Chinese, English and Spanish and find that most metaphors come from the source domain *ocean water*. Vaghi and Venuti (2003) analyze how movement metaphors are used in The Economist and The Financial Times and conclude that movements in the air are the most frequent in both. Luporini (2013) studies all issues of the Financial Times and IlSole24ore in the financial crisis year 2008 and finds that the source domains of the metaphors used are the same in the English and the Italian newspaper: physical object, container, health, war and natural force. Cardini (2013) analyzes the metaphors in articles from the Economist and that describe the 2008 financial crisis in the period Fall 2008-Winter 2012. His focus is on which metaphors are used to describe the crisis, not on all

metaphors in articles about the crisis. He finds forty different metaphors and concludes that their source domain is human being, object, and motion. Ho and Cheng (2016) study metaphors in BNP Paris Bas financial analysts reports, focusing on the source domains of emotions. Their purpose is to see what these source domains reveal about the bank's corporate culture. They find that the source domains include *inter alia* elements of *nature (liquid, wave, contraction)*, *fighting and movement*. Morris *et al* (2007) analyze stock market reporting, distinguishing not between metaphor domains but between *agent* and *object* metaphors. Agent metaphors describe stock price movements as the result of an action of an animate being, while object metaphors describe stock price movements as the result of an external physical force. Examples mentioned by Morris *et al* are "the Dow fought its way upward" (agent) and "the S&P bounced back" (object). Morris *et al* find that the use of these metaphors is not random, with agent metaphors used more often when the stock market goes up. They also study the effect of the two different types of metaphors on investor expectations, and are the first (and to our knowledge thus far the only) who analyze the effect of metaphors in financial market texts on readers. They find that agent metaphors lead to a continuancy bias: they increase the probability that investors expect a stock price movement to continue. The effect is reinforced if the commentary is accompanied by a graph instead of a table, which further underscores the relevance of imagery. Interestingly, they also find that readers (implicitly) believe that other readers ("the market") will be affected more by the commentary than they are themselves. Robertson (2015) argues that metaphors in investment information can also be interpreted according to whether they provide long run or short run information, and that investors with a long-term horizon should not act upon articles whose metaphors stress short-term aspects

Boggio *et al* (2014) are the first to pay attention to the gender aspect of the source domain of metaphors in financial communication. They identify the metaphors used in websites addressing beginning retail investors, categorize them according to their source domain, and qualify the latter as masculine, feminine or neutral, using the Bem sex role inventory. They find that in the three languages they study – Dutch, English and Italian – the vast majority of metaphors come from masculine source domains. The present paper has a similar focus but a different database: articles in general newspapers about the stock market, in two distinct periods: the stock market crash period of autumn 1997 and the same ten-day period in 2015. Moreover, in this article we provide additional underpinnings for the ranking of source domains on a masculinity-femininity scale.

While research by linguists on the source domains of conceptual metaphors, and in marketing on the use of creative metaphors, abounds, there is – to our knowledge - surprisingly little comparative research on metaphors according to the masculinity/femininity of their source domain, except for the language by politicians.[2] Neither have we found studies analyzing the gender aspect of metaphors in communication by the financial sector, including pension funds, or gender marketing in the financial industry, nor on possible source domain effects of metaphors in financial communication. This paper is a contribution to filling this gap.

4. Methodology and data

For the purpose of this study, as mentioned previously, we analyzed two Dutch nationwide newspapers - an expert financial newspaper, het *Financieele Dagblad* (FD) and a paper for the general public, *Algemeen Dagblad* (AD). As events in this context are at times subject to great turmoil, we selected articles both from a "crash" period (24 October – 2 November 1997) and a stable period (24 October – 2 November 2015). Our first period coincides with that chosen by Charteris-Black and Ennis (2001) for their study on metaphors in British stock market reporting for that period. By choosing a period of turbulence and one of relative stability we can compare metaphor use depending on the situation in the stock market. Remember however that the scope of our work differs from the analysis of linguists who have as their final goal to identify which metaphors are used for the abstract concept of a (financial) market. Our ultimate goal is to assess the effect (if any) of metaphors in stock market articles, through the channel of affect, on the (investment) attitudes and behavior of the readers of such articles. Hence if an article should talk about, for instance, building your retirement portfolio, we would include it even though it does not explicitly refer to a market (although a portfolio usually consists of assets that are traded in a financial market).

Figure 1 and Table 2 show the stock market development in the two periods covered by our database. As can be seen in Figure 1, the stock market crashed at the end of the third week in October to arrive at a six month low, and in the months thereafter it did not return to the pre

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Politician's speech has been studied from the perspective of masculinity/femininity. For example, Semino and Masci (1996) find that Berlusconi uses many football metaphors. They speculate that these are not gender-neutral, not only because more men than women like football, but also because the "archetypical representation" of a football player is a man.

crash level. From Table 2 it can be seen that during the same ten-day period in 2015, stock prices hardly moved.

Figure 1. The stock market crash of October 1997

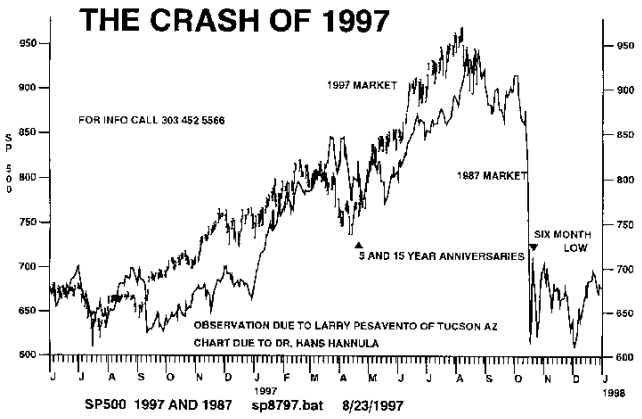

Table 1. AEX stock market index, 24 October-2 November 2015

2-11-2015	464,58
30-10-2015	462,12
29-10-2015	462,99
28-10-2015	463,21
27-10-2015	458,43
26-10-2015	462,87
23-10-2015	465,0

Source: www.aex.nl

Since our goal was to analyze the degree of masculinity of metaphor use in newspaper articles about the stock market our first task was to isolate all articles specifically addressing the stock market. We retrieved our dataset through Lexis Nexis by entering the search term *aandeel* (Dutch for stock). This yielded a selection of all articles mentioning 'aandeel' in these newspapers. In the 1997 AD paper, 35 total articles contained at least once the word *aandeel*, for the 1997 FD the result was 87 articles; for 2015, this was 5 and 47 articles, respectively (see Table 2). The difference in the number of articles between AD and FD is not surprising: AD is a

general, FD a financial newspaper. The large difference between the 1997 and 2015 dataset is not surprising either: 1997 was a period of crisis, which warrants more newspaper coverage of the stock market. Note that in normal times, the general newspaper pays little attention to the stock market.

Subsequently, we scanned all articles to verify that the search term 'aandeel' was indeed used for a financial asset (in Dutch the word 'aandeel' can also be used in another sense, meaning 'part' or 'playing a role'). This underscores that a computer search tool is not enough to create a useful database, and that after a first computer selection, human discretion is necessary. We did not find any articles containing our search term *aandeel* in another sense than a financial asset, however. Next, we analyzed a subset of the articles in order to identify metaphors, making sure that this subsample contained articles of both AD and FD in 1997 and in 2015. Our subset contained all 35 articles of the 1997 AD paper, and 35 articles (41%) of the 1997 FD paper. We approached the 2015 data sets in a similar way, though the data for this set were less extensive: we included all five 2015 AD paper articles using the Dutch word for stock in its financial sense, while we analyzed 19, or 40%, of the 2015 FD articles.

Table 2 gives an overview of the articles as well as the total word count of the sample per period and newspaper and the number of analyzed articles.

Table 2. Summary statistics newspaper articles on stocks October 24-November 2

	1997		2015	
	AD	FD	AD	FD
N of articles$	35	87	5	47
N of words	13,446	52,831	3,110	27,349
Average length of article	384	614	622	582
Subset of analyzed articles	35	35	5	19

$ with the search term (*aandelen*) in the sense of financial asset
Source: constructed by the authors

We used this set of analyzed articles to identify the use of metaphors. As we noted earlier, metaphor identification involves searching not merely for words, but also for context (Goschler, 2007). It is important that researchers have explicit criteria for categorization, although this is especially the case if different languages are compared. Computer tools are not only insufficient to create a reliable database, they are also unable to fully identify the metaphors used for

creating a reliable database. This is because it depends on the context whether a word or expression is a metaphor – think of our previous example of growth in the context of a plant (not a metaphor) or of assets (a metaphor). In fact, for the purpose of our paper both a quantitative and a qualitative analysis are required, where the former allows us to compare the use of metaphors and the relative importance of metaphor domains across the newspapers, while the latter is a prerequisite for metaphor identification in the first place.

Qualitative analysis

We started by reading the articles, and in checking them for metaphors we used primarily a bottom-up method. Many metaphor studies into stock market reporting take the opposite route, taking as research question whether a certain source domain "delivers" metaphors in the target domain of investing or stock market, or they ask the question how the stock market is metaphorically described. This is because most studies (Morris *et al* 2007 being an exception) into metaphor use are carried out by linguists, who are primarily interested in metaphor use as such. We are interested in the imagery encountered by the reader when confronted with stock market articles, which calls for a bottom-up approach. As in Boggio *et al* (2017) we scrutinized the text for words and/or phrases that showed incongruity or semantic tension resulting from a conceptual shift in domain use. Previous work has shown that this method results in metaphor identification that is quite consistent across researchers (Shuttleworth, 2017). According to Loscher (2007) the intuitive method is implicitly based on two analytical criteria: is the word or expression true, and/or is the word or expression used in another sense than the first/most important meaning. To take examples from financial markets: in "beating the market", "beating" is neither true nor the first meaning of beating, while market is true, but not the first meaning of market (which is a physical meeting place where people trade goods over the counter). In our approach, market is not a metaphor, while beating the market is. Only if in doubt whether or not to identify a word or expression as a metaphor, we checked whether or not it is true. If not, we decided to classify it as a metaphor. The initial reading and checking was carried out by the member of our research team that previously had never done research into or paid attention to the stock market or financial decision-making in general. This way we have ensured that the impressions were closest to that of a general reader, and that the metaphor identification was not confounded by expert knowledge of financial terminology.

After finding a metaphor in the subset, we used Simple Concordance Program (SCP)[3] to determine the frequency of the metaphor in the full sample of newspaper articles containing the word 'aandeel'. SCP allows researchers of metaphor to create word lists and search natural language text files for words, phrases, and patterns. It enabled us to search for a specific word or part of a word, giving us both the frequency as well as the context - the search term is preceded and followed by parts of the sentence, adding up to 70 bytes of word data context. Next, we were able to manually select the occurrences in which a word was used metaphorically. For example, a search for "grow" might yield 53 hits. Each hit would be placed in a contextual sentence. If the team member was uncertain whether or not a word or expression should be included, this was discussed and agreed upon with at least one of the other team members.

Note that our method differs from that of for instance Joris *et al.* (2014) who limit their analysis to a small number of metaphors per article, and of "top down" approaches that choose a certain source domain and then see which metaphors of this domain are found in a text. An example of the latter is Vaghi and Venuti (2003). The reason we have chosen out method is that we are not interested so much in whether individual metaphors occur often or not, and which specific metaphors from a given source domain occur in the newspaper articles, but in the masculinity of the imagery evoked by the metaphors. To give an example, if we would find one hundred unique metaphors that all create masculine imagery, for our purpose it would be the same as finding a single metaphor evoking masculine imagery and occurring a hundred times. We could also directly have decided for every metaphor whether or not it evokes masculine imagery, instead of first "allocating" the metaphors to a source domain. However, the latter is more in line with the basic tenet of Lakoff and Johnson (1980) who argue that certain target domains "borrow" from certain source domains. The Appendix presents tables with all metaphors found.

Table 3 gives summary statistics of the metaphors identified in the full database. Some of the metaphors are found very often, while others occur no more than once. Multiplying all different metaphors with their frequency yields a total of 518 metaphoric expressions in the AD and 1,607 in the FD during the ten-day period in 1997, and of 106 and 754 in the same ten-day period in 2015.

[3] http://www.textworld.com/scp/. Simple Concordance Program (SCP) allows researchers of metaphor to create word lists and search natural language text files for words, phrases, and patterns. SCP is a concordance and word listing program that is able to read texts written in many languages. There are built-in alphabets for English, French, German, Greek, Russian, etc. SCP contains an alphabet editor that can be used to create alphabets for any other language.

Table 3. Corpus statistics

	1997			2015	
	AD	**FD**		**AD**	**FD**
N of articles	35	86		5	47
N of metaphors*	518	1,607		106	754
Average *n* per article	15	19		21	16

Source: constructed by the authors
*Note that a metaphor may contain more than one word. Examples are "als een achtbaan met veel loopings" *(like a roller coaster with many loopings)*, "centrale bankiers vechten een vorige oorlog uit" (*central bankers are battling in a previous war).*

The next step involved identifying the source domain of each metaphor: the concrete physical or sensory domain from which the word or expression is "borrowed". The first reader proposed an allocation, about which we then decided together. We find that – in line with Lakoff and Johnson (1980) the vast majority of the metaphors found in the target domain at hand, investing in stocks/stock market, come from a limited number of source domains. We identify these domains as (in alphabetical order):

Source Domain	**Example**
FORCE/PHYSICAL LABOUR/POWER	*beursreus* (stock market giant)
GAME	*verlies* (loss)
NATURE	*golf* (wave)
HEALTH/WELLBEING	*gezond* (healthy)
PHYSICAL MOVEMENT/MOTION	*schommelen* (swinging)
WAR/COMBAT	*onder vuur liggen* (being under fire)

These domains overlap to a large degree with the ones found by Boggio *et al.* (2014). A difference is that in our database we found metaphors picturing developments in the stock market in terms of natural disasters and the elements (for instances storms, wave, shock), while Boggio *et al.* (2014) do not. We have ranked these in the source domain NATURE in which we also included farming metaphors that in Boggio *et al* (2014) account for a farming source domain.

For two reasons we are not surprised that our database of newspaper articles covering the stock market contains natural disaster metaphors, while that of websites for beginning investors analyzed in Boggio *et al* (2014) does not. The first is that we have a stock market crisis period in our database, and other studies on metaphors in financial crisis reporting have also found this

domain. The other is that Boggio *et al* (2014) does not consist of journalist reporting about the stock market, but of texts explaining investing to beginners: there is no "need" to describe financial crisis periods there. Moreover, we found two types of metaphors that could not be ranked under the source domains identified by Boggio *et al* (2014). The first type consists of metaphors that depict the financial market as an animate being. This is in line with findings of other studies on newspaper articles about financial markets during crisis periods, for instance Charteris-Black and Ennis (2001). "The market was nervous" is an example of such a metaphor. We regard these metaphors as belonging to the source domain HEALTH, which is found to be important in Boggio *et al* (2014). The second type consists of metaphors referring to FORCE/STRENGTH. We feel that these cannot be ranked under the source domain of physical movement as they refer to a potential, not an activity. For instance, potential, giant, mega are clearly metaphors when used in stock market reporting, but cannot be classified as physical *activity*. We also found that were difficult to allocate to one of the above source domains or to one additional domain. We decided to allocate them to a category "other" and to decide later on whether they evoke masculine imagery directly on an individual basis (hence without using a source domain). This way we have a category "other" which is undefined in terms of source domain, but in which we will have identified the masculinity of each individual metaphor. Table 4 presents the number of metaphors for each source domain identified in our dataset.

Table 4. Metaphors according to source domain, per newspaper

	1997		**2015**	
	AD	**FD**	**AD**	**FD**
GAME	98	357	21	119
HEALTH/WELLBEING	55	178	12	39
NATURE	31	137	3	99
PHYSICAL ACTIVITY	170	355	35	187
PHYSICAL FORCE/POWER	25	117	11	86
SENSES	32	54	4	41
WAR/CONFLICT	88	274	14	130
NON-CLASSIFIED	18	133	6	53
TOTAL	**517**	**1,605**	**106**	**754**

Table 5 below shows the top three source domains per newspaper and period, and shows that they are identical across newspapers and periods. This is in line with Lakoff and Johnson (1980)

who argue that a given target domain (in our case *stock market*) borrows from a limited number of source domains. The most important source domains are in all cases *physical activity/motion*, *game* and *war/combat*, and they contain the majority of source domains in all cases (AD 1997: 69%, FD 1997: 63%, AD 2015: 66%, and FD 2015: 58%. Note that the source domain *physical power* is, in both newspapers, more important in times of stability than during the crisis.

Table 5. Top 3 source domains, per newspaper

	AD		FD	
1997	1. PHYSICAL ACTIVITY	33%	1. PHYSICAL ACTIVITY	23%
	2. GAME	19%	2. GAME	23%
	3. WAR/CONFLICT	17%	3. WAR/CONFLICT	17%
2015	1. PHYSICAL ACTIVITY	33%	1. PHYSICAL ACTIVITY	25%
	2. GAME	20%	2. WAR/CONFLICT	17%
	3. WAR/CONFLICT	13%	3. GAME	16%

Source: constructed by the authors

Our data show that in both the general and the financial newspaper, metaphors are "borrowed" from identical source domains. This applies to both the 1997 and the 2015 database. Moreover, in 1997 the top 3 of most frequent metaphors is the same in these newspapers: 1) PHYSICAL ACTIVITY, 2) GAME, 3) WAR. These "top 3" source domains count for 65- 70 % of all metaphoric expressions in each period and newspaper. We find that although in normal times the stock market coverage in the general press is much more limited than in the financial newspaper, the source domains are the same. This suggests that a well performing stock market is of less interest to readers of a general newspaper, which is in line with our expectations as their readers are less focused on investing themselves.

5. The masculinity dimension

We are interested in two, not unrelated questions. The first is whether the aspects of (investing in) the stock market that are made salient by the metaphors used in newspaper articles may involve (and hence potentially encourage) action and competition. We are interested in this

question because previous research finds that stock market participants trade excessively, that is, trade more than is warranted by the gains from trading. The second is whether the imagery created by the metaphors could create different affect and hence risk perception and return expectation depending on the gender of the reader. This question is important because thus far the gender difference in stock market participation is a puzzle. We address these questions by investigating how we can categorize the metaphors that we find in our database of newspaper articles on the stock market depending on the masculinity of their source domains.[4]

Masculinity can be defined as a set of characteristics that are thought to be typical of or suitable to men. Hence masculine is not the same as male, just as feminine is not the same as female. Boggio *et al* (2014) use the Bem Sex-Role Inventory (BSRI; Bem 1974) to identify these characteristics. According to the BSRI men are assumed (and/or expected) to be competitive, willing to fight and take risks, whereas women are assumed (and/or expected) to be understanding, caring and loving.[5] The BSRI was still valid in 1998 (Holt and Ellis, 1998) in the sense that the same characteristics were attributed to/expected from men, women, despite women's lib and an increase in labor market participation of women. More recent research confirms that certain traits and activities are (still) associated with men, and others with women. For instance, Blakemore and Centers (2005) ask undergraduates to rate toys according to their suitability for boys, girls or both. Based on these ratings, they categorize the toys on a masculinity-femininity scale and ask *other* undergraduates to judge the toys according to their characteristics. They find that the masculine toys were associated with competition, risk, aggression, movement, and construction, while the feminine toys were associated with appearance and nurture. Other studies find that strength, cars and sports are regarded as stereotypical or even hyper-masculine domains (Messner, 2002). Strength has historically been representative of masculinity as men required physical strength to farm, trade, or create their livelihoods pre-industrialization, and this is still reflected in what is considered as masculine nowadays, even if today physical strength is not required to create a living or have a career.

A recent anecdotic example suggesting that men and women are judged by different traits is

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[4] In social psychology, "heuristics" are simple, efficient rules which people often use to form judgments and make decisions. In a nutshell, they are mental shortcuts that usually involve focusing on one aspect of a complex problem and ignoring others.

[5] The Bem Sex-Role Inventory (BSRI) is a questionnaire created by American psychologist Sandra Bem in 1974 in an effort to measure psychological androgyny, and provide empirical evidence to show the advantage of a shared masculine and feminine personality versus a sex-typed categorization. The test is formatted with 60 different personality traits. Participants rate themselves on each trait based on a 7 point-scale. Traits are evenly dispersed, 20 masculine, 20 feminine, and 20 filler traits thought to be gender neutral.

found in the metaphoric judgment and description of the first female presidential candidate in the US. Goggling *Hillary Clinton* and *warm* leads to hits discussing whether Hillary is warm or not, while goggling *Obama* and *warm* or *Trump* and *warm* results in messages about Obama receiving a warm welcome, and Trump-fans warming up to Russia. Apparently, having a warm (caring, loving, understanding) personality is still considered key for women (Prast, 2016). Moreover, the analysis of performance reviews reveals that the same traits regarded as positive for men are described as negative for women (see for instance Cecchi-Dimeglio, 2017).

The concept of masculinity has also been used to identify a society's culture. Hofstede (2011) describes a masculine society as a society that is driven by competition and achievement, in which conflict is resolved by force, and which is ego-oriented. Note that this is not the same as saying that in a masculine society, men and women have more traditional roles, or that in a feminine society women have a position that is more equal to men. On the contrary: in a masculine society, women are more competitive than in a feminine society. Rather, the masculinity or femininity culture of society reflects values in the sense of "broad tendencies to prefer certain states over others" (Hofstede 2011, p. 3). A country scoring high on masculinity may also score high on the index of good working conditions for women, while countries scoring high on femininity may score low on this index. The Netherlands is an example of the latter: it scores low on masculinity (14), but is at the same time among the 7 worst countries to be a working woman as rated by The Economist.[6] Be this as it may, according to Hofstede's definition of a masculine society, masculinity implies a focus on competing, achieving and individuality.

If we want to know whether metaphor domains may create different affect among men and women there are other ways to identify them than directly by their masculinity. For instance, one may study conversations of men and women to identify the metaphors they use and the source domain these belong to. Newman *et al.* (2008) analyze 14,000 text samples for gender differences in language use. These texts include fiction, exams, and written down spontaneous conversations. The authors find that men talk significantly more often about football, play and game, and less about most of the senses. Men are more reluctant to talk about their *own health*, using distancing language more often than women (Boggio *et al.*, 2014).

[6] The Economist Daily Chart March 3, 2016: The best- and worst – places to be a working woman, www.economist.com/blogs/graphicdetail/2016/03/daily-chart-0

The metaphors used in stock market reporting may also have a different impact depending on how familiar (psychologically close) the source domains are to the reader. We use two proxies for familiarity: occupation, and leisure activities. Previous studies into retail investor behavior find that investors tend to prefer assets that are geographically close (Huberman 2001; see also Merton, 1987 and Boyle *et al*, 2012). Huberman explains the investor home bias by familiarity induced by geographical proximity, concluding that investors "prefer the familiar, ignoring the principles of portfolio theory: "People…. feel comfortable investing their money in a business that is *visible* (Italics: the authors) to them (see also Heath and Tversky, 1991). Seasholes and Zhu (2010) conclude that investors do not earn superior returns on local stocks and conclude that the home bias does not reflect an information advantage, and despite globalization, the home bias remains strong (Solnik and Zuo, 2010). Doskeland and Hide (2011) show that even after correcting for own employer, employees tend to invest their pension savings in the industry they work in - something which is unlikely to be optimal from the point of view of diversification of human and financial capital. There is also a bias toward investing pension savings in employer stock, which did not disappear even after the bankruptcy of Enron which made clear that this is a strategy of all eggs in one basket (Choi *et al.*, 2005). According to the OECD (2005), in OECD countries men are much more likely to work in mining, construction and agriculture, while women are more likely to work in nursing and primary education. The Netherlands is no exception to this general OECD picture, as can be seen in publications by CBS (Statistics Netherlands, 2005). Moreover, competitive sports are more important as a profession for men than for women - the Forbes list of 100 highest paid sportspeople in the world contains only two women.[7] Moreover, much more men than women work in the military and go to war is much higher for a man than for a woman; women account for less than ten percent in the NATO armed forces[8], and in the (recent) past they were not even allowed there. Moreover, there is a consistent and persistent pattern, both over time and across countries, of gender differences in leisure activities, with men spending a larger proportion of leisure time on participation in and watching of competitive sports and outdoor physical activities. Men choose competitive sports much more often, while women prevail in sports where competition is absent, such as dancing, fitness, and jogging (CBS, 2010). Moreover, according to Statistics Netherlands, the main gender difference in participation in the Netherlands in leisure activities is in wellness (f>>m) and visiting sport matches (m>f) (CBS, 2015). Both men and women gamble as a hobby. However, men tend to prefer action gambling, such as playing cards, betting on horses and

[7] http://www.forbes.com/athletes/list/3/#tab:overall
[8] http://userpages.aug.com/captbarb/NATOwomen.html

sports, while women favor passive gambling, such as buying a lottery ticket (Schmidt and Bradr, 2012).

Irrespective of which one of the categorization methods we have just described, FORCE/POWER, WAR/COMBAT and GAME can be defined as masculine source domains. As to PHYSICAL ACTIVITY, this contains both masculine (for instance *pompen*, or pumping) and neutral (for instance *zitten op*, sitting on) metaphors. We have classified this domain as masculine as it does not include activities associated with or deemed appropriate for women. This leads us to the following categorization of metaphors according to the masculinity of the imagery they create (Table 6).

Table 6. Masculine metaphors in newspaper articles about the stock market#

	1997		2015	
	AD	**FD**	**AD**	**FD**
GAME	98	357	21	119
PHYSICAL ACTIVITY	170	355	35	187
PHYSICAL FORCE/POWER	25	117	11	86
WAR/CONFLICT	88	274	14	130
TOTAL masculine	381	1,103	81	754
Masculine metaphors as % of total	74%	69%	76%	69%

#N of metaphors in this category
*all metaphors, including those that do not come from masculine source domains
&if physical activity considered masculine%
$ if physical activity considered neutral
Source: constructed by the authors

Table 6 shows that metaphors from masculine source domains dominate in newspaper articles about stocks both in 1997 and in 2015, hence in crisis and in normal times. This applies to both the financial and the general press. The relative importance of the masculine domains is not lower in the general press – rather, the opposite is true -, suggesting that readers not specially interested in financial markets are exposed to mainly masculine metaphors when they read about the stock market. The percentages we find for are similar to those found by Boggio *et al.* (2014) in websites for beginning investors, where the masculine metaphors account for 75% of metaphors in Dutch, 66% in English and 60% in Italian.

From our findings we can derive the following conclusions. The source domains of the metaphors in the covering of the stock market during the 1997 crash are identical in the general and the financial Dutch newspaper. In both types of newspaper, PHYSICAL ACTIVITY (which includes building, construction) is the source domain from which metaphors are borrowed most frequently, followed by GAME, and WAR/COMBAT. The majority of the metaphors in articles about the stock market is borrowed from masculine source domains in both the general and the financial newspaper, and in both coverage of the 1997 stock market crash and of the same calendar period of a stable stock market in 2015.

6. Discussion

We find that a large fraction of the metaphors in Dutch newspaper articles about the stock market is refers to? masculine source domains. This is true for both crisis and stable times and for the general as well as the financial press. Our finding implies that newspaper readers are in many cases confronted with masculine imagery, involving movement, force and power, war and game/competition, when reading about the stock market. According to linguists, metaphors serve the function of making the reading about abstract concepts accessible and interesting to the wider public. Following sociopsychological insights, imagery creates affect, and affect influences risk perception and return expectation. If masculine metaphors create positive affect among men, not women, they could have a gender specific impact on risk perception and return expectations. Therefore, the metaphors could influence both people's attitude toward participating in the stock market, and influence the attitudes and behavior of those already participating. Perhaps they could contribute to the gender difference in perceived risk tolerance, stock market attitudes and participation. Our finding that metaphors are predominantly masculine could also shed light on excess trading of investors, especially of men (Barber and Odean, 2013). This excess trading has been explained by overconfidence, with gender used as proxy because in general men are more overconfident than women. However, this leads to the question where overconfidence comes from, and it cannot be excluded that it is triggered by context, including (metaphoric) imagery. Further research is needed to assess this.

The gender difference in self assessed financial risk attitudes and investment behavior is still a puzzle, despite numerous studies trying to explain it (Van Geen, 2014). Risk tolerance questionnaires reveal a gender difference in self assessed risk tolerance, but skin response tests reveal no difference in emotional arousal between men and women when taking financial risks

(Brighetti and Lucarelli, 2013). In fact, skin response test find that women are much more risk tolerant than risk tolerance questionnaires suggest. Apparently, self-assessed risk tolerance and actual risk taking behavior are influenced by context and stereotype threat. The metaphors in stock market reporting are part of context, and could therefore be a relevant factor in explaining the difference.

Follow up research should involve research experiments and calls for two directions. The first is primary in linguistics: identifying the vocabulary used by men and women when they talk freely about money, retirement saving and investing. This could take the form of an analysis of spoken language in (single sex) groups as well as an analysis of language used in online fora, and compare this to stock market language in the press and in communication with retail investors. The second would be primarily economic, by carrying out surveys and lab experiments, allocating participants randomly to a metaphor condition to see whether attitudes and decisions differ, depending on the masculinity of the metaphor source domains. Ultimately we aim to shed more light on the still unresolved questions of excess trading and the gender difference in financial attitudes and financial behavior under risk.

7. Summary and conclusions

To our knowledge ours is the first study analyzing gendered aspects of metaphor use in Dutch newspaper articles covering the stock market. We find that the majority of metaphors in our database, which covers a period of a stock market crash and of a stock market in stable, relate to a small number of source domains, which are identical across a general and a financial newspaper, and across times of financial crisis and of stability. This is in line with conceptual metaphor theory, which argues that a target domain –in this case, the stock market– does not randomly borrow from source domains. We also find that in both types of newspapers and in both stock market conditions, most metaphors are borrowed from source domains that classify –using various methods– as masculine, where masculinity is defined as consisting of characteristics and activities that are expected of and/or deemed suitable for and/or typical of men. This implies that most metaphors in these articles will create an imagery of masculine characteristics and activities. This comes as no surprise given that the financial industry and financial journalism have always been, and to a large degree still are, a men's world, but it may be non-neutral in its effect on the reader. Metaphors create imagery, which in its turn creates affect, and it is well documented that affect influences perceptions and expectations under risk.

The imagery created by the majority of the metaphors in these articles consists of competition, movement, force/power and war/combat. We therefore argue that the metaphors used in stock market reporting and commentary, both in the financial and the general press, may be an independent factor influencing attitudes and behavior regarding the stock market, inducing trading activity among those attracted by the imagery, and result in a gender difference in attitudes and behavior. Paraphrasing Huberman (2003), this may add "a non-pecuniary dimension to the traditional risk-return tradeoff". This is not merely of academic interest. Despite a large body of research devoted to its explanation, the gender difference in financial attitudes and behavior is still a puzzle, while excess trading in the stock market is widespread, especially among men. Whereas financial communication, including pension communication, is among the priorities of policymakers and supervisors, financial language, specifically its metaphor use, is seldom the object of research or evaluation. Further research is needed to identify the effect of stock market metaphors on risk perception, return expectations, investment attitudes, stock market participation, portfolio choice and trading activity.

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APPENDIX

A1. Metaphors identified in AD and FD newspapers about the stock market (search term: aandeel, = Dutch for stock in the sense of financial asset), 24 October-2 November 1997

A1.1: Metaphor Source Domain: Health/Wellbeing

Metaphor	AD 97	FD 97	AD+FD 1997
herstel (herstellen)	16	35	51
(on)rust	2	29	31
(on)aantrekkelijk	3	15	18
angst (in/van de markt, angstige markt, angstgolf, 'met angst en beven', angst overheerst)	7	3	10
somber	5	4	9
gezond (financiele situatie, bankieren, overnames, correctie..)	2	5	7
zwak/sterk (zenuwen, munt, herstel, klimaat)	4	25	29
lijden, leden (banken, bedrijven)	0	10	10
depressie	2	0	2
polsslag	1	0	1
geïnfecteerd	0	1	1
prognose (renteprognose, winstprognose)	1	11	12
aantasten (aantasting)	2	2	4
goed/slecht doen	2	1	3
vinger aan de pols	1	0	1
thermometer	1	0	1
trauma	1	0	1
gezond verstand	0	1	1
zout in wonden strooien	0	1	1
koortsachtig	0	1	1
kwakkelen	0	1	1
als een gek	0	1	1
weerstand	0	2	2
(on)rust, (on)rustig	4	26	30
oprisping	0	1	1
van luier tot incontinentie	0	1	1
verzorgen	1	1	2
[belasting] ophoesten	0	1	1
TOTAL	**55**	**178**	**233**

A1.2. Metaphor Source Domain: Physical Activity/Motion

Metaphor	AD 97	FD 97	AD+FD 1997
dalen (daling, gedaalde)	32	83	115
stijgen (stijging, steeg, stegen)	30	77	107
vallen (val, koersval, beursval, wegvallen, terugvallen)	41	63	104
zakken (inzakken, zakte)	15	32	47
stappen (uitstappen, instappen, overstappen, stap)	11	30	41
bewegen (bewegingen, beweeglijk, bewegelijk - van de markt, aandeel)	7	12	19
sprong (springen in het oog, reuzensprong, recordsprong)	5	3	8
oplopen, teruglopen	4	8	12
lopen (fysiek: weglopen, ergens mee rondlopen, meelopen, tegen de lamp lopen)	4	5	9
stuiteren	2	0	2
schommelen (schommeling)	5	5	10
krabbelen (op-, omhoog-, omlaag-)	2	4	6
spreid (spreiding, verspreiden)	3	8	11
(in) stand houden/blijven	2	6	8
duikelen (duikeling)	3	4	7
opduiken	2	0	2
ontduiking	2	0	2
inloodsen	0	1	1
de oversteek maken	0	1	1
zitten op	0	1	1
in slaap sukkelen	0	1	1
sluipen	0	2	2
aankloppen	0	2	2
strooien met	0	2	2
oprekken	0	2	2
struinen	0	1	1
harken	0	1	1
achter de oren krabben	0	1	1
TOTAL	**170**	**355**	**525**

A1.3. Metaphor Source Domain: Senses

Metaphor	AD 97	FD 97	AD+FD 1997
pijn (pijn lijden, pijn verzachten, pijnlijk, pijnbank)	2	4	6
wit geld, witwassen (en afgeleiden: wast wit, witwaspraktijken..)	13	5	18
zwart + geld (ook: zwarte bonus)	6	0	6
er zit een luchtje aan	1	0	1
oog (hebben voor, op het)	1	3	4
met zorg kijken naar/gadeslaan	0	4	4
zwaar op de schouders drukken	0	1	1
een beeld van	1	17	18
aan het licht komen	2	2	4
rooskleurig	0	2	4
op het eerste gezicht	0	2	2
lichten staan op rood, groen	0	3	3
ergens naar kijken	6	7	13
gespitst zijn op	0	3	3
vergrijzing	0	1	1
TOTAL	**32**	**54**	**88**

A1.4. Metaphor Source Domain: Physical Force, Physical Labour, Power

Metaphor	AD 97	FD 97	AD+FD 1997
beursreuzen, reus	2	1	3
bouwen (opbouwen, onderbouwen, uitbouwen)	2	10	12
top	5	17	22
kracht	3	12	15
de kop indrukken	0	1	1
domineren	0	1	1
draagkracht	0	1	1
opschroeven	0	1	1
storten in (elkaar), in(een)storting	2	5	7
sleutelen aan	0	2	2
aanboren	0	1	1
kelderen	4	7	11
crash	3	22	25
zware belasting	0	1	1
omlaag drukken, trekken	0	3	3
schade (oplopen, aanrichten - re: de markt/aandelen)	1	13	14
drukkende (invloed, werking, effect)	0	3	3
Bijspijkeren	0	1	1
(op)stuwen	0	2	2
Omvallen (van instellingen, fondsen)	1	3	4

rem, remming	2	4	6
op volle toeren draaien	0	1	1
druk op de munt	0	3	3
ijzersterk	0	2	2
TOTAL	**25**	**117**	**142**

A1.5. Metaphor Source Domain: Game

Metaphor	**AD 97**	**FD 97**	**AD+FD 1997**
winst (winnen)	39	169	208
verlies (verliezen, verliezers, koersverlies, verloren, verliesgevend)	42	141	183
spel (spelen, speelbal)	5	11	16
kwijtraken	3	3	6
voorstander, tegenstander	1	2	3
als een achtbaan met veel loopings	1	0	1
gokken	0	1	1
opbrengst	1	4	5
record	6	14	20
puntenwinst	0	2	2
race	0	1	1
wisseltruc	0	1	1
keerzijde van de medaille	0	1	1
aanmoedigen	0	5	5
aan de slag	0	2	2
TOTAL	**98**	**357**	**453**

A1.6. Metaphor Source Domain: War/Conflict

Metaphor	**AD 97**	**FD 97**	**AD+FD 1997**
gevangen	1	1	2
een klap (en afgl: klappen, zware klap, forse klap, grote kla, klapper)	12	10	22
onderuit gaan/halen	6	9	15
aanval/inval (aanvallen, invallen)	4	11	15
dreig (dreiging, bedreiging)	2	12	14
grens	3	9	12
jagen (jager, jacht)	3	4	7
getroffen (o.a. zwaarst getroffen)	4	2	6
tik	1	5	6
onder vuur liggen	1	3	4
bestrijden (bestreden, bestrijding)	3	1	4

toe slaan	3	0	3
linie	1	2	3
koersexplosie	1	1	2
doel (doelwit, doelstelling, doelen op)	1	8	9
schreeuwen	1	1	2
verdedigen	1	1	2
worstelen (worsteling)	0	2	2
meesleuren	1	0	1
koppen rollen	1	0	1
troepen	1	0	1
verdrukking	1	0	1
ervan langs krijgen	1	0	1
bestormen	0	1	1
partij (tegenpartij, oppositiepartij, marktpartij)	10	42	52
strategie	1	9	10
vijand (vijandig)	0	1	1
de kop kosten	0	1	1
kampen met	0	4	4
goedmaken	0	2	2
genade, genadeloos	1	3	4
bom, bombarderen	1	1	2
zegevieren	0	1	1
front	2	3	5
versterking	0	1	1
agressief	0	2	2
stoot opvangen	0	1	1
raider	0	1	1
in de luren leggen	0	1	1
op de pijnbank leggen	0	1	1
fiscaal afstraffen	0	1	1
overname	3	28	31
azen op	0	3	3
terugtrekken	0	6	6
uitkijken	0	1	1
lanceren	0	3	3
het hoofd bieden	0	1	1
beschermen, beschermin	0	5	5
positie afdekken	0	1	1
aanscherpen, verscherpen (veel: van toezicht)	5	4	9
duikvlucht	1	0	1
schiet, schoot (op en neer, omhoog, door)	2	6	8
onder druk staan/zetten	2	13	15
vlucht (vluchten, duikvlucht, toevlucht, vluchthaven)	4	18	22
gevaar, gevaren	1	5	6

redden (reddingspoging, reddingsplan)	0	2	2
operatie	2	12	14
verraadt zich	0	1	1
inleveren	0	6	6
fiscaal afstraffen	0	1	1
TOTAL	**88**	**274**	**362**

A1.7. Metaphor Source Domain: Nature

Metaphor	**AD 97**	**FD 97**	**AD+FD 1997**
groei (uitgroeien, scheefgroei, groei van markt, munt, waarde, risico, omzet..)	12	49	61
turbulentie	3	10	13
golf (golven)	7	5	12
storm	1	11	11
wind (tegenwind, wervelwind, windeieren	1	5	6
lucht (is uit de lucht, meer lucht geven)	0	3	3
kou (kou niet uit de lucht, van een koude kermis..)	1	1	2
hond (gebeten, tandeloze waakhond)	0	2	2
geen vuiltje aan de lucht	1	0	1
fuseren (fusie)	3	6	9
liquiditeit (liquide)	0	17	17
schok (schokgolf)	0	3	3
bigbang	0	5	5
overleven	1	1	2
vuur (zn, vuurtje stoken)	0	2	2
drafje	0	1	1
onstuimig	0	2	2
vaarwater	0	2	2
in goede aarde vallen	0	1	1
ten goede vloeien aan	0	1	1
vruchten	0	6	6
het tij keren	0	3	3
(in het) water (vallen	1	1	2
TOTAL	**31**	**137**	**167**

A1.8. Metaphor Source Domain: Non-classified

Metaphor	AD 97	FD 97	AD+FD 1997
vertalen	1	3	4
samba-rumoer	0	1	1
mandje (aandelen, mandjeshandel)	1	9	10
drama (dramatisch)	3	1	4
munt steunen	0	3	3
op zijn kop zetten	0	1	1
de ruk op de koppeling	0	1	1
[winst] stapelt zich op	0	1	1
uit den boze	0	1	1
rekening houden met/ergens mee	2	10	12
banden hebben [met iem]	1	1	2
draaien (excl.: draaien om, i.e. Iets draait over..)	3	14	17
hand (hand leggen op, van de hand doen, hand die je voedt)	1	3	4
dochter(-bedrijf)	1	16	17
noemer en teller (breuk)	0	1	1
opgesloten liggen in	0	1	1
pilaar	0	1	1
lichten, gelicht	0	2	2
zwijggeld	0	1	1
les (leren, trekken uit)	0	5	5
Hongkong-bibbers	0	3	3
de kroon spannen	1	1	2
links en rechts	0	1	1
uit de bus komen, rollen	1	1	2
krimp, krimpen	0	4	4
in de etalage zetten	0	3	3
vangnet	0	2	2
krap (krappe markt)	0	3	3
baken verzetten	1	1	2
een handje helpen	0	1	1
(de bank) voedde (de markt)	0	1	1
moeder (bedrijf)	1	2	3
erin gaan als koek	0	1	1
portefeuille	1	33	34
TOTAL	18	133	151

A2. Metaphors identified in AD and FD newspapers about the stock market (search term: aandeel, = Dutch for stock in the sense of financial asset), 24 October-2 November 2015

A2.1. Metaphor Source Domain: Health/Wellbeing

Metaphor	AD 2015	FD 2015	AD+FD 2015
herstel	0	3	3
gezond	0	1	1
goed doen	1	3	4
ter ziele gaan	1	0	1
rust/onrust	4	3	7
beursdip	2	0	2
vet op de botten	1	0	1
beroerd	1	3	4
injectie (geldinjectie)	0	2	2
aantrekkelijk	0	8	8
sterk, zwak (sterkte, versterken)	0	14	14
op eigen benen staan	0	1	1
wankel	0	1	1
dood- (doodgewoon, doodeng)	2	0	2
TOTAL	**12**	**39**	**51**

A2.2. Metaphor Source Domain: Physical Activity

Metaphor	AD 2015	FD 2015	AD+FD 2015
kloppen (aankloppen)	1	0	1
zitten (ergens bovenop, op de eerste rij, ruim in geld zitten)	11	3	14
stap (stappen, overstappen, instappen, uitstappen)	4	8	12
dalen (daal, daling, prijsdaler..)	13	60	73
ontpopt tot	1	0	1
opgeknipt	1	0	1
vallen (val, vielen, terugvallen)	0	5	5
opvangen	0	3	3
zakken (inzakken, zakte)	0	7	7
verruimen/verkrappen (verruiming, verkrapping)	0	15	15
bewegen	0	6	6
stijgen (stegen)	1	43	44
aantrekken	2	6	8
de deur open houden voor	0	1	1
knagen aan	0	1	1
op de rol stappen	0	1	1
in zijn maag zitten met	0	1	1

het onderste uit de kan halen	0	2	2
in het slop zitten	0	1	1
ophalen	0	4	4
terugtrekken 2	0	2	2
[verlies] opvangen	1	3	4
in slaap sussen	0	1	1
omarmen	0	1	1
teruglopen, oplopen	0	5	5
voorsorteren op het moment dat de wegen van x en n uit elkaar gaan	0	1	1
stuiteren	0	2	2
erboven hangen	0	1	1
opvangen	0	4	4
TOTAL	**35**	**187**	**222**

A2.3. Metaphor Source Domain: Senses

Metaphor	**AD 2015**	**FD 2015**	**AD+FD 2015**
oog (in het oog springend)	1	3	4
pijn (pijnlijk)	1	4	5
beeld (uit beeld raken)	1	5	6
transparant (transparantie)	0	8	8
geluid (geluiden)	0	2	2
vergrijzing	0	3	3
rooskleurig	0	1	1
zwart, wit	0	1	1
beproefd	0	1	1
kijken	1	10	11
spiegelbeeldig	0	1	1
gierend	0	1	1
ogen	0	1	1
TOTAL	**4**	**41**	**45**

A2.4. Metaphor Source Domain: Physical Force, Physical Labour, Power

Metaphor	AD 2015	FD 2015	AD+FD 2015
top- (topondernemer, topman)	4	8	12
reus (reusachtig)	2	5	7
meesterzet	1	0	1
kracht (kapitaalkracht)	1	12	13
mega- (megadeal)	1	0	1
de baas zijn (fig)	1	1	2
bouwen	0	8	8
gigant	0	5	5
potentie	0	1	1
rem	0	1	1
pompen (in het systeem pompen, oppompen)	0	4	4
(in elkaar) storten	1	7	8
crashen	0	1	1
oprekken	0	1	1
omvallen	0	1	1
optrekken 2	0	1	1
trekken	0	2	2
langs het randje scheren	0	1	1
overeind houden	0	1	1
duwen	0	1	1
aandrijven	0	1	1
drukken	0	5	5
met ijzeren hand	0	1	1
uit de grond stampen	0	1	1
hard zijn	0	4	4
opschroeven	0	2	2
morrelen aan	0	1	1
hefboom	0	1	1
gaten vullen	0	1	1
aan de knoppen draaien	0	1	1
dominant, domineren	0	6	6
van formaat	0	1	1
TOTAL	**11**	**86**	**97**

A2.5. Metaphor Source Domain:: Game

Metaphor	AD 2015	FD 2015	AD+FD 2015
Opbrengst	1	5	6
verlies (verliezen, verloren)	14	53	67
winst (winnen, winnaar)	6	53	59
bal neerleggen bij	0	1	1
polonaise	0	1	1
spel (speel, speler)	0	6	6
TOTAL	**21**	**119**	**140**

A2.6. Metaphor Source Domain: War/Conflict

Metaphor	AD 2015	FD 2015	Total frequency
strijd	1	3	4
klappen (klap)	3	6	9
verovering	1	0	1
bescherming	1	3	4
gevaar	2	0	2
bivak (startersbivak)	0	1	1
jagen (jaag, aanjagen)	0	8	8
klap (klappen, inklappen)	3	6	9
aanvallen	0	1	1
vecht	0	7	7
doel	0	14	14
partij	0	7	7
strategie	0	6	6
oorlog	0	4	4
vluchten	0	1	1
vijand (vijandig)	0	2	2
linie (frontlinie)	0	1	1
onderuit gaan/halen	0	3	3
dreigen	0	1	1
mikken	0	5	5
vlucht	0	3	3
verdedigingsmuren	0	1	1
verdedigen	1	2	3
uitvalsbasis	0	1	1
optrekken 1	0	1	1
terugtrekken 1	0	1	1
wapenen	0	2	2
kleerscheuren	0	1	1
versterken	0	4	4

verscherpen, aanscherpen	0	3	3
overname	2	25	27
doorgeschoten	0	2	2
ergens voor waken	0	1	1
interen op voorraden	0	1	1
onder vuur liggen	0	1	1
positie afdekken	0	1	1
erboven hangen als een zwaard van Damocles	0	1	1
TOTAL	**14**	**130**	**144**

A2.7. Metaphor Source Domain: Nature

Metaphor	**AD 2015**	**FD 2015**	**AD+FD 2015**
verdampen	2	1	3
groei (meegroeien)	1	46	47
zeepbel, bubbel	0	3	3
liquiditeit	0	3	3
opdrogen	0	2	2
water (verwatering)	0	3	3
levenscyclus	0	1	1
stroom (stromen)	0	18	18
fuseren (fusie)	0	5	5
turbulentie	0	1	1
golf	0	3	3
schok	0	2	2
piek	0	5	5
van de grond komen	0	1	1
de wind van voren krijgen	0	1	1
bij de poot nemen	0	1	1
naar buiten stormen	0	1	1
vuur	0	1	1
doorsijpelen	0	1	1
TOTAL	**3**	**99**	**102**

A2.8. Metaphor Source Domain: Non-Classified

Metaphor	AD 2015	FD 2015	AD + FD 2015
gas op de lolly	1	0	1
hand (in handen van, met ijzeren hand)	2	8	10
voor de boeg	1	0	1
een schijntje	1	0	1
klein bier	1	0	1
een handvat	0	2	2
bandbreedte	0	2	2
vraagtekens zetten	0	2	2
portefeuille	0	16	16
mandje	0	2	2
rekening houden met	0	2	2
durfinvesteerder	0	2	2
staatspapier	0	4	4
schim	0	1	1
het alfa en omega van	0	1	1
aan een touwtje hebben	0	1	1
kaartenhuis	0	2	2
voetnoot	0	1	1
consumeren	0	2	2
spekken	0	1	1
pijler	0	1	1
gedrocht	0	1	1
één naald in het kompas	0	1	1
beleggingsvehikel	0	1	1
TOTAL	**6**	**53**	**59**